

Claims

What is claimed is:

- 1 1. A method of assessing whether a patient is afflicted with prostate cancer, the
2 method comprising comparing:
 - 3 a) the level of expression of a marker in a patient sample, wherein the marker is
4 selected from the group consisting of the markers listed in Tables 1-1 to 6, and
 - 5 b) the normal level of expression of the marker in a control non-prostate cancer
6 sample,
7 wherein a significant difference between the level of expression of the marker in the
8 patient sample and the normal level is an indication that the patient is afflicted with prostate cancer.
- 1 2. The method of claim 1, wherein the marker corresponds to a secreted protein.
- 1 3. The method of claim 1, wherein the marker corresponds to a transcribed
2 polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.
- 1 4. The method of claim 1, wherein the sample comprises cells obtained from the
2 patient.
- 1 5. The method of claim 4, wherein the sample is a prostate tissue sample.
- 1 6. The method of claim 4, wherein the cells are in a fluid selected from the
2 group consisting of blood fluids, semen, prostate fluid, lymph and urine.
- 1 7. The method of claim 1, wherein the level of expression of the marker in the
2 sample is assessed by detecting the presence in the sample of a protein or protein fragment
3 corresponding to the marker.

1 8. The method of claim 7, wherein the presence of the protein or protein
2 fragment is detected using a reagent which specifically binds with the protein or protein fragment.

1 9. The method of claim 8, wherein the reagent is selected from the group
2 consisting of an antibody, an antibody derivative, and an antibody fragment.

1 10. The method of claim 1, wherein the level of expression of the marker in the
2 sample is assessed by detecting the presence in the sample of a transcribed polynucleotide or
3 portion thereof, wherein the transcribed polynucleotide comprises the marker.

1 11. The method of claim 10, wherein the transcribed polynucleotide is an mRNA.

1 12. The method of claim 10, wherein the transcribed polynucleotide is a cDNA.

1 13. The method of claim 10, wherein the step of detecting further comprises
2 amplifying the transcribed polynucleotide.

1 14. The method of claim 1, wherein the level of expression of the marker in the
2 sample is assessed by detecting the presence in the sample of a transcribed polynucleotide which
3 anneals with the marker or anneals with a portion of a polynucleotide wherein the polynucleotide
4 comprises the marker, under stringent hybridization conditions.

1 15. The method of claim 1, wherein the level of expression of the marker in the
2 sample differs from the normal level of expression of the marker in a patient not afflicted with
3 prostate cancer by a factor of at least about 2.

1 16. The method of claim 1, wherein the level of expression of the marker in the
2 sample differs from the normal level of expression of the marker in a patient not afflicted with
3 prostate cancer by a factor of at least about 5.

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1 17. The method of claim 1, comprising comparing:
 2 a) the level of expression in the sample of each of a plurality of markers
 3 independently selected from the markers listed in Tables 1-1 to 6, and
 4 b) the normal level of expression of each of the plurality of markers in samples
 5 of the same type obtained from control humans not afflicted with prostate cancer,
 6 wherein the level of expression of more than one of the markers is significantly
 7 altered, relative to the corresponding normal levels of expression of the markers, is an indication
 8 that the patient is afflicted with prostate cancer.

1 18. The method of claim 17, wherein the level of expression of each of the
 2 markers is significantly altered, relative to the corresponding normal levels of expression of the
 3 markers, is an indication that the patient is afflicted with prostate cancer.

1 19. The method of claim 17, wherein the plurality comprises at least three of the
 2 markers.

1 20. The method of claim 17, wherein the plurality comprises at least five of the
 2 markers.

1 21. A method for monitoring the progression of prostate cancer in a patient, the
 2 method comprising:

3 a) detecting in a patient sample at a first point in time, the expression of a
 4 marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1
 5 to 6;
 6 b) repeating step a) at a subsequent point in time; and
 7 c) comparing the level of expression detected in steps a) and b), and therefrom
 8 monitoring the progression of prostate cancer.

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1 22. The method of claim 21, wherein the marker corresponds to a secreted
2 protein.

1 23. The method of claim 21, wherein the marker corresponds to a transcribed
2 polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1 24. The method of claim 21, wherein the sample comprises cells obtained from
2 the patient.

1 25. The method of claim 24, wherein the patient sample is a prostate tissue
2 sample.

1 26. The method of claim 21, wherein between the first point in time and the
2 subsequent point in time, the patient has undergone surgery to remove prostate tissue.

1 27. A method of assessing the efficacy of a test compound for inhibiting prostate
2 cancer in a patient, the method comprising comparing:

3 a) expression of a marker in a first sample obtained from the patient and
4 exposed to the test compound, wherein the marker is selected from the group consisting of the
5 markers listed in Tables 1-1 to 6, and

6 b) expression of the marker in a second sample obtained from the patient,
7 wherein the sample is not exposed to the test compound,

8 wherein a significantly lower level of expression of the marker in the first sample,
9 relative to the second sample, is an indication that the test compound is efficacious for inhibiting
10 prostate cancer in the patient.

1 28. The method of claim 27, wherein the first and second samples are portions of
2 a single sample obtained from the patient.

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1 29. The method of claim 27, wherein the first and second samples are portions of
2 pooled samples obtained from the patient.

1 30. A method of assessing the efficacy of a therapy for inhibiting prostate cancer
2 in a patient, the method comprising comparing:

3 a) expression of a marker in the first sample obtained from the patient prior to
4 providing at least a portion of the therapy to the patient, wherein the marker is selected from the
5 group consisting of the markers listed in Tables 1-1 to 6, and

6 b) expression of the marker in a second sample obtained from the patient
7 following provision of the portion of the therapy,

8 wherein a significantly lower level of expression of the marker in the second sample,
9 relative to the first sample, is an indication that the therapy is efficacious for inhibiting prostate
10 cancer in the patient.

1 31. A method of selecting a composition for inhibiting prostate cancer in a
2 patient, the method comprising:

3 a) obtaining a sample comprising cancer cells from the patient;

4 b) separately exposing aliquots of the sample in the presence of a plurality of
5 test compositions;

6 c) comparing expression of a marker in each of the aliquots, wherein the marker
7 is selected from the group consisting of the markers listed in Tables 1-1 to 6; and

8 d) selecting one of the test compositions which alters the level of expression of
9 the marker in the aliquot containing that test composition, relative to other test compositions.

1 32. A method of inhibiting prostate cancer in a patient, the method comprising:

2 a) obtaining a sample comprising cancer cells from the patient;

3 b) separately maintaining aliquots of the sample in the presence of a plurality of
4 test compositions;

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- 5 c) comparing expression of a marker in each of the aliquots, wherein the marker
6 is selected from the group consisting of the markers listed in Tables 1-1 to 6; and
7 d) administering to the patient at least one of the test compositions which alters
8 the level of expression of the marker in the aliquot containing that test composition, relative to other
9 test compositions.

1 33. A kit for assessing whether a patient is afflicted with prostate cancer, the kit
2 comprising a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

1 34. A kit for assessing the presence of prostate cancer cells, the kit comprising a
2 nucleic acid probe wherein the probe specifically binds with a transcribed polynucleotide
3 corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to
4 6.

1 35. A kit for assessing the suitability of each of a plurality of compounds for
2 inhibiting prostate cancer in a patient, the kit comprising:

- 3 a) the plurality of compounds; and
4 b) a reagent for assessing expression of a marker selected from the group
5 consisting of the markers listed in Tables 1-1 to 6.

1 36. A method of making an isolated hybridoma which produces an antibody
2 useful for assessing whether a patient is afflicted with prostate cancer, the method comprising:
3 isolating a protein or protein fragment corresponding to a marker selected from the
4 group consisting of the markers listed in Tables 1-1 to 6;
5 immunizing a mammal using the isolated protein or protein fragment;
6 isolating splenocytes from the immunized mammal;
7 fusing the isolated splenocytes with an immortalized cell line to form hybridomas;
8 and

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9 screening individual hybridomas for production of an antibody which specifically
10 binds with the protein or protein fragment to isolate the hybridoma.

1 37. An antibody produced by a hybridoma made by the method of claim 36.

1 38. A kit for assessing the presence of human prostate cancer cells, the kit
2 comprising an antibody, wherein the antibody specifically binds with a protein or protein fragment
3 corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to
4 6.

1 39. A method of assessing the prostate cell carcinogenic potential of a test
2 compound, the method comprising:

3 a) maintaining separate aliquots of prostate cells in the presence and absence of
4 the test compound; and

5 b) comparing expression of a marker in each of the aliquots, wherein the marker
6 is selected from the group consisting of the markers listed in Tables 1-1 to 6,

7 wherein a significantly altered level of expression of the marker in the aliquot
8 maintained in the presence of the test compound, relative to the aliquot maintained in the absence of
9 the test compound, is an indication that the test compound possesses human prostate cell
10 carcinogenic potential.

1 40. A kit for assessing the prostate cell carcinogenic potential of a test
2 compound, the kit comprising prostate cells and a reagent for assessing expression of a marker,
3 wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6.

1 41. A method of inhibiting prostate cancer in a patient at risk for developing
2 prostate cancer, the method comprising inhibiting expression of a gene corresponding to a marker
3 selected from the markers listed in Tables 1-1 to 6, wherein the gene is overexpressed in prostate
4 cancer.

1 42. The method of claim 41, further comprising the step of providing to cells of
2 the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a
3 marker selected from the markers listed in Tables 1-1 to 6.

1 43. A method of inhibiting prostate cancer in a patient at risk for developing
2 prostate cancer, the method comprising increasing expression of a gene corresponding to a marker
3 selected from the markers listed in Tables 1-1 to 6, wherein the gene is underexpressed in prostate
4 cancer or expressed in normal prostate tissue.

1 44. A method for determining whether prostate cancer has metastasized in a
2 patient, the method comprising comparing:
3 a) the level of expression of a marker in a patient sample, wherein the marker is
4 selected from the group consisting of the markers listed in Tables 1-1 to 6, and
5 b) the normal level or non-metastatic level of expression of the marker in a
6 control sample
7 wherein a significant difference between the level of expression in the patient sample
8 and the normal level or non-metastatic level is an indication that the prostate cancer has
9 metastasized.

1 45. The method of claim 44, wherein the marker corresponds to a secreted
2 protein.

1 46. The method of claim 44, wherein the marker corresponds to a transcribed
2 polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1 47. The method of claim 44, wherein the sample comprises cells obtained from
2 the patient.

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1 48. The method of claim 47, wherein the patient sample is a prostate tissue
2 sample.

1 49. A method for assessing the aggressiveness or indolence of prostate cancer
2 comprising comparing:

3 a) the level of expression of a marker in a sample, wherein at least one marker is
4 selected from the markers of Tables 1-1 to 6, and
5 b) the normal level of expression of the marker in a control sample,
6 wherein a significant difference between the level of expression in the sample and
7 the normal level is an indication that the cancer is aggressive or indolent.

1 50. The method of claim 49, wherein the marker corresponds to a secreted
2 protein.

1 51. The method of claim 49, wherein marker corresponds to a transcribed
2 polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1 52. The method of claim 49, wherein the sample comprises cells obtained from
2 the patient.

1 53. The method of claim 52, wherein the patient sample is a prostate tissue
2 sample.

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- 1 54. A system for identifying selected polynucleotide records that identify a
2 prostate cancer cell, the system comprising:
3 a digital computer;
4 a database coupled to the computer;
5 a database coupled to the database server having data stored therein, the data
6 comprising records of data comprising a polynucleotide corresponding to a marker from the
7 markers in Tables 1-1 to 6; and
8 a code mechanism for applying queries based upon a desired selection criteria to the
9 data file in the database to produce reports of polynucleotide records which match the desired
10 selection criteria.
- 1 55. A method for detecting a prostate cancer cell, using a computer having a
2 processor, memory, display, and input/output devices, the method comprising the steps of:
3 a) providing a sequence of a polynucleotide isolated from a sample suspected of
4 containing a prostate cancer cell;
5 b) providing a database comprising records of data comprising a polynucleotide
6 corresponding to a marker from the markers in Tables 1-1 to 6; and
7 c) using a code mechanism for applying queries based upon a desired selection
8 criteria to the data file in the database to produce reports of polynucleotide records of step a) which
9 provide a match of the desired selection criteria of the sequences in the database of step b), the
10 presence of a match being a positive indication that the polynucleotide of step 1) has been isolated
11 from a cell that is a prostate cancer cell.